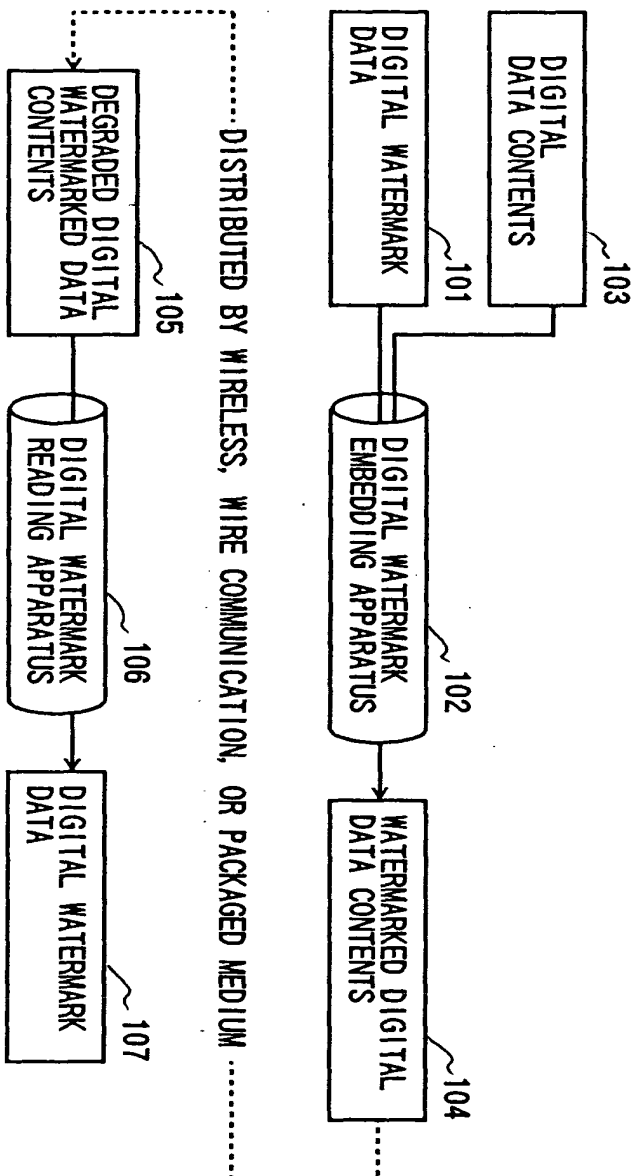


FIG. 1



Block diagram of a digital watermark embedding apparatus (103) and its associated data flows. The diagram shows the process of embedding a digital watermark into digital data contents. Key components include:

- 101: Digital Watermark Data** ($w[0] w[1] \dots w[n-1]$)
- 102: Key Data** (Key)
- 103: Digital Watermark Embedding Apparatus**
- 104: Digital Data Contents** (I)
- 105: Diffuse Digital Data**
- 106: Digital Watermark Sequence**
- 107: Pseudo-Random Sequence**
- 108: Key Data Pseudo-Random Sequence**
- 109: Block Data** ($B[0] B[1] \dots B[m-1]$)
- 110: Perform Orthogonal Transform on Block Data**
- 111: Frequency Coefficient Matrix** ($C[0] C[1] \dots C[m-1]$)
- 112: Select Coefficient from Coefficient Matrix with Pseudo-Random Sequence**
- 113: Frequency Coefficient Sequence** ($f[0] f[1] \dots f[m-1]$)
- 114: Embed Digital Watermark Sequence**
- 115: Watermarked Frequency Coefficient Sequence** ($r[0] r[1] \dots r[m-1]$)
- 116: Watermarked Frequency Coefficient Matrix** ($C'[0] C'[1] \dots C'[m-1]$)
- 117: Inverse-Orthogonal-Frequency Coefficient Transform Watermarked Matrix**
- 118: Watermarked Block Data** ($B'[0] B'[1] \dots B'[m-1]$)
- 119: Replace Block Data of Digital Data Contents with Watermarked Block Data**
- 120: Watermarked Digital Data Contents** (I')

The diagram illustrates the flow of data from the input digital data and key data through various processing steps to produce the final watermarked digital data.

WATERMARKED DIGITAL DATA CONTENTS

FIG.3 PRIOR ART

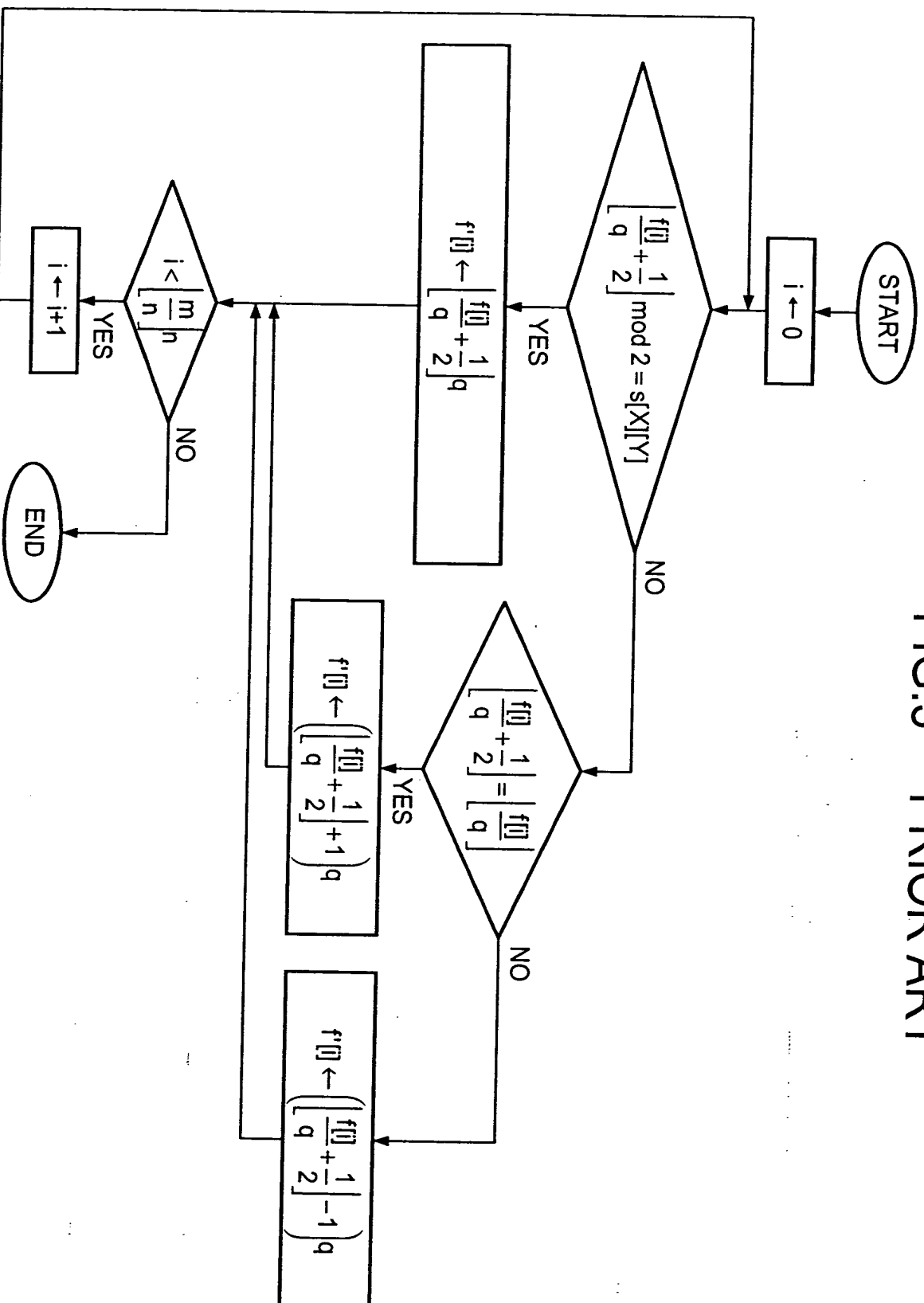


FIG. 4 PRIOR ART

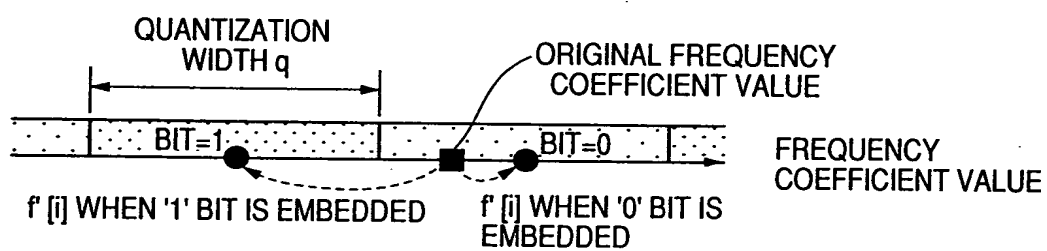


FIG.5 PRIOR ART

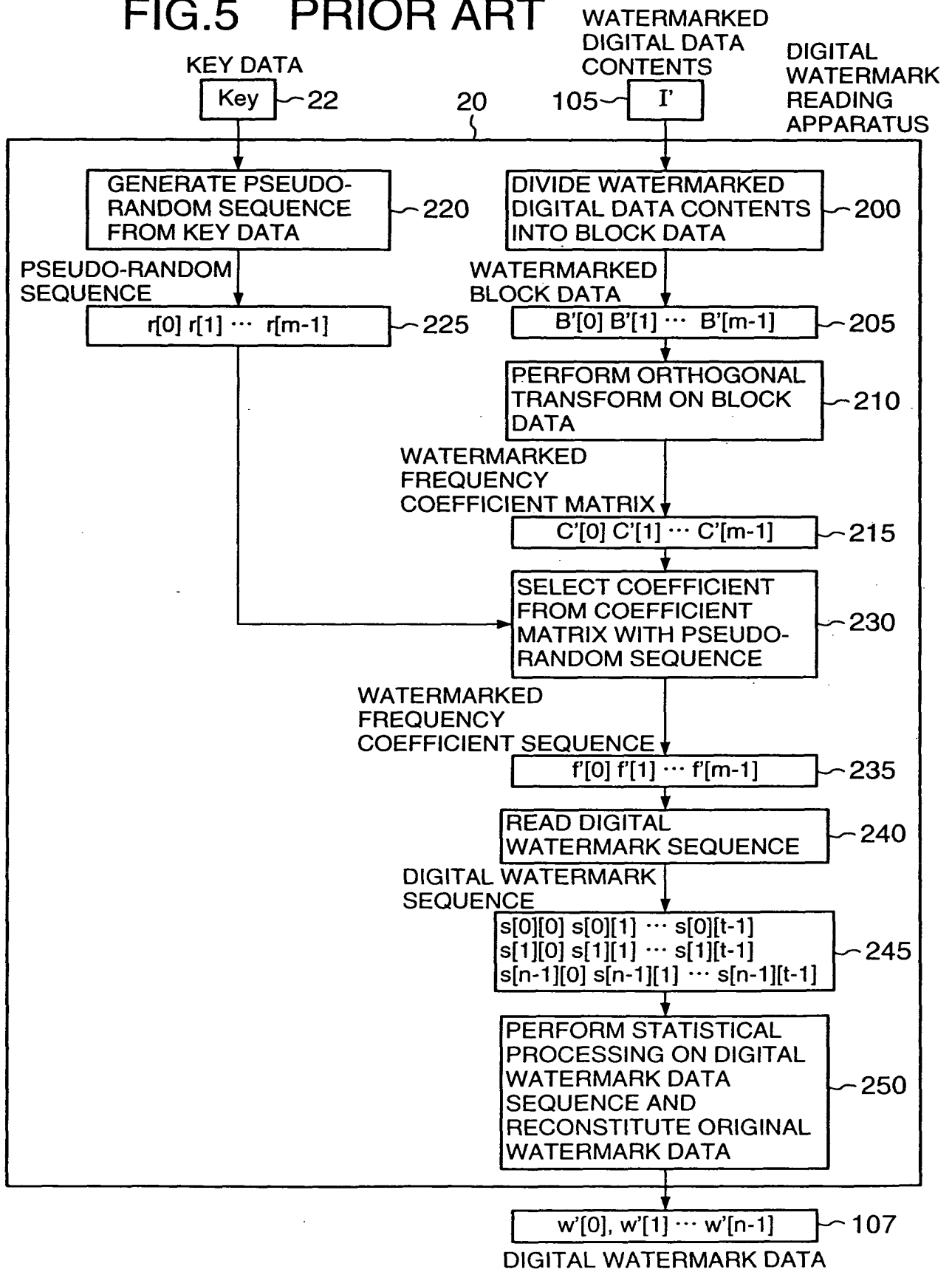


FIG.6 PRIOR ART

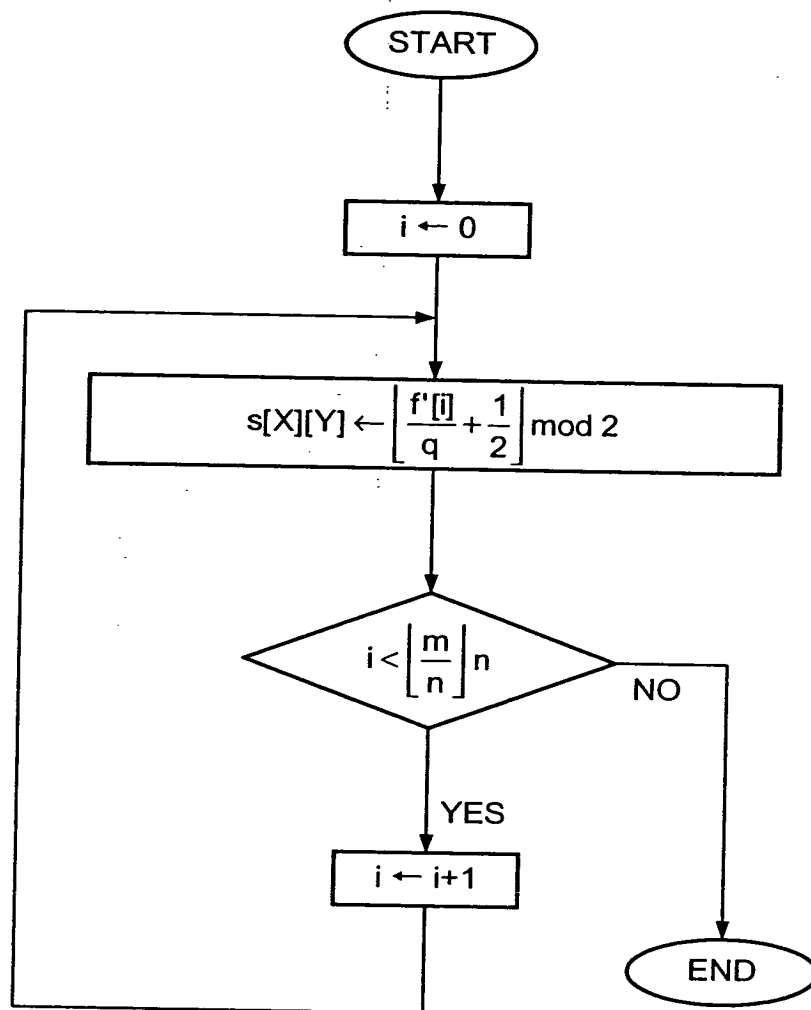


FIG.7

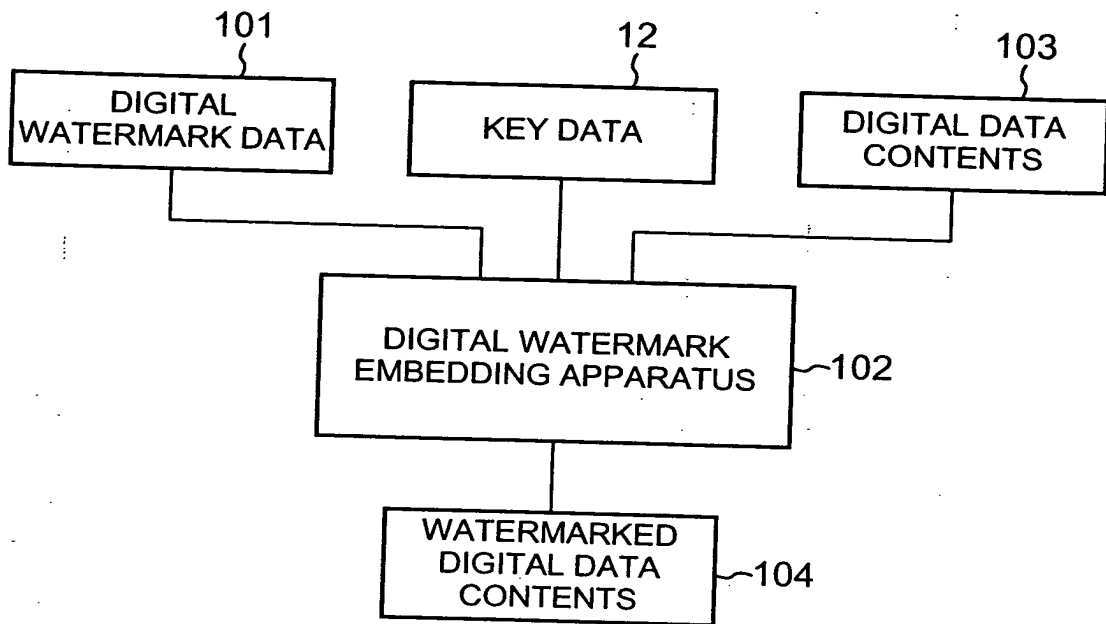


FIG.8

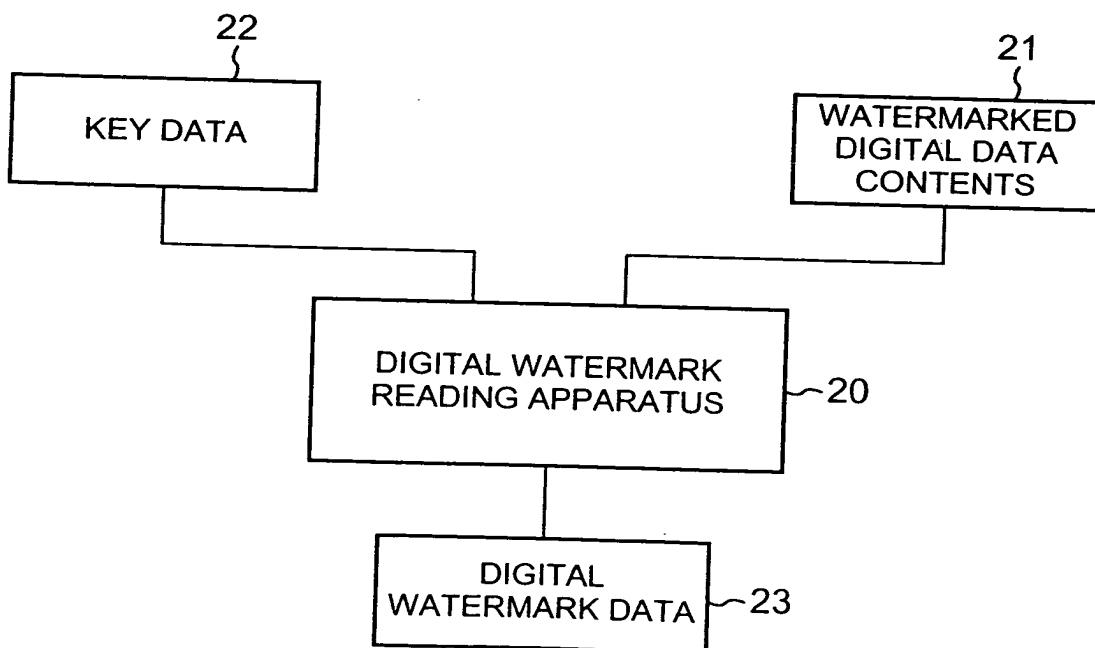


FIG.9

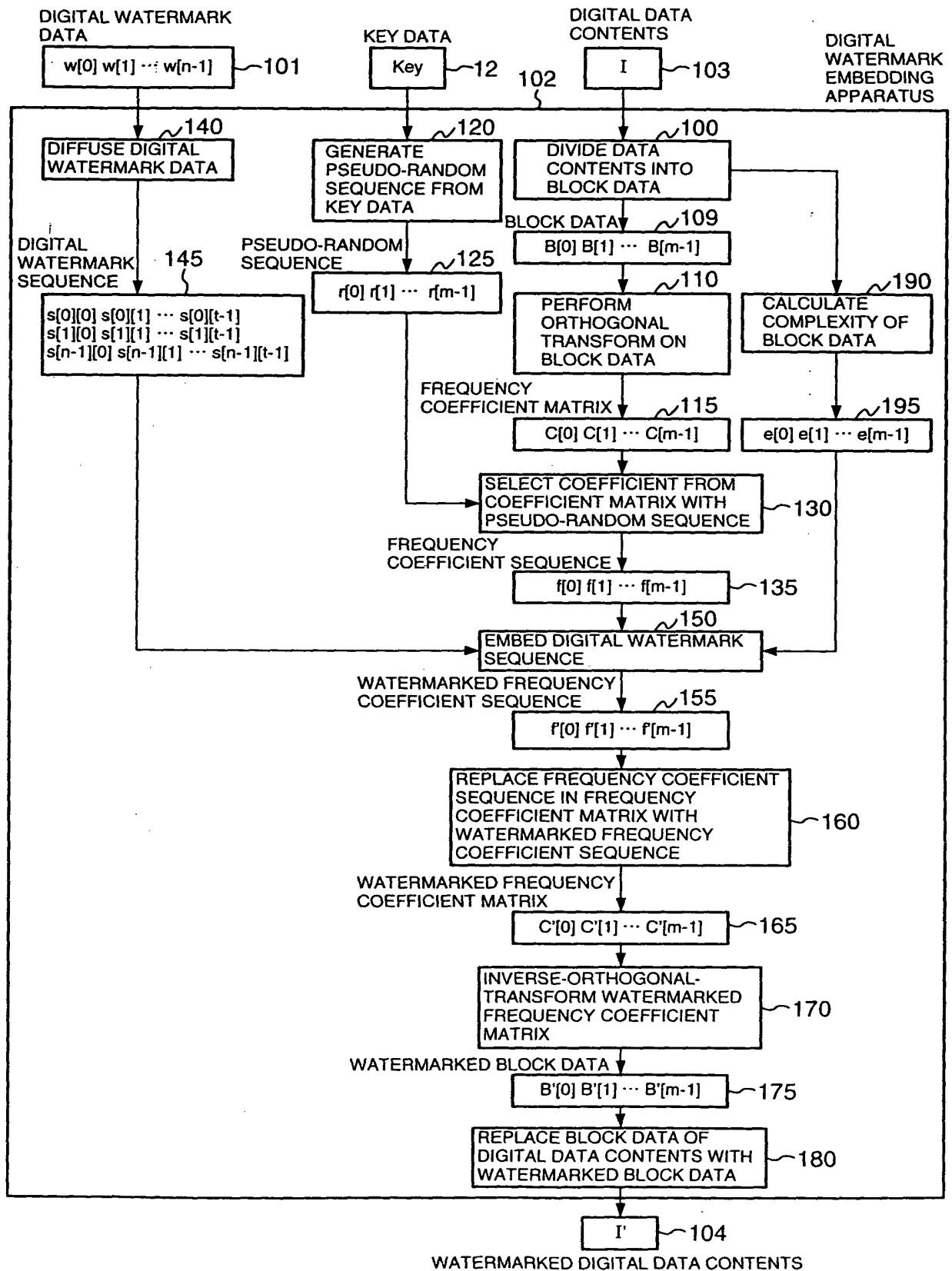


FIG.10

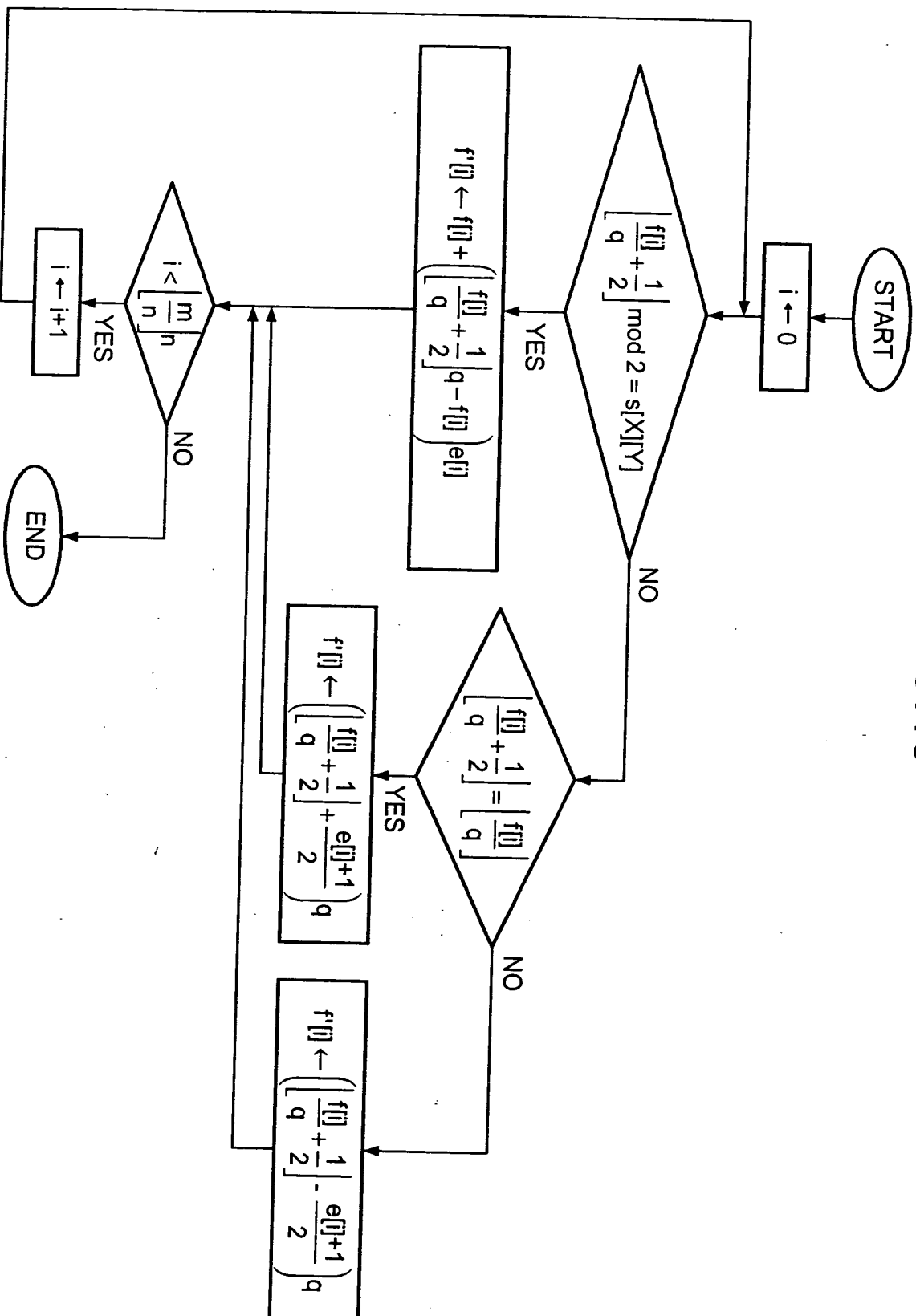


FIG. 11A

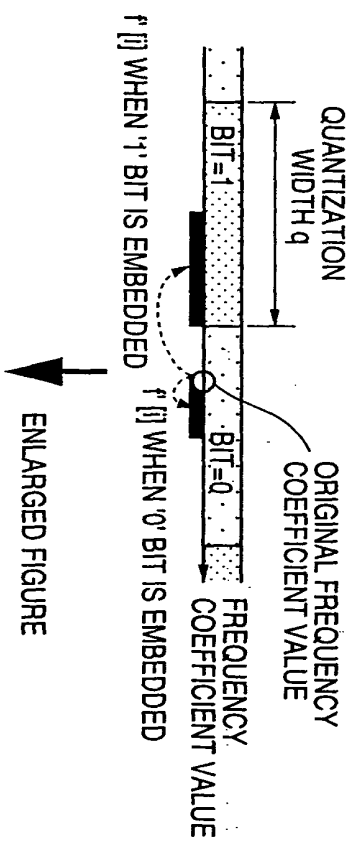


FIG. 11B

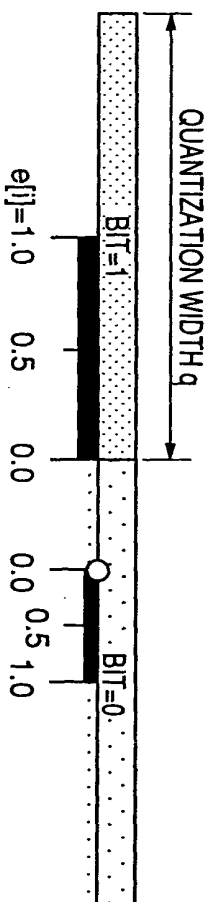


FIG.12

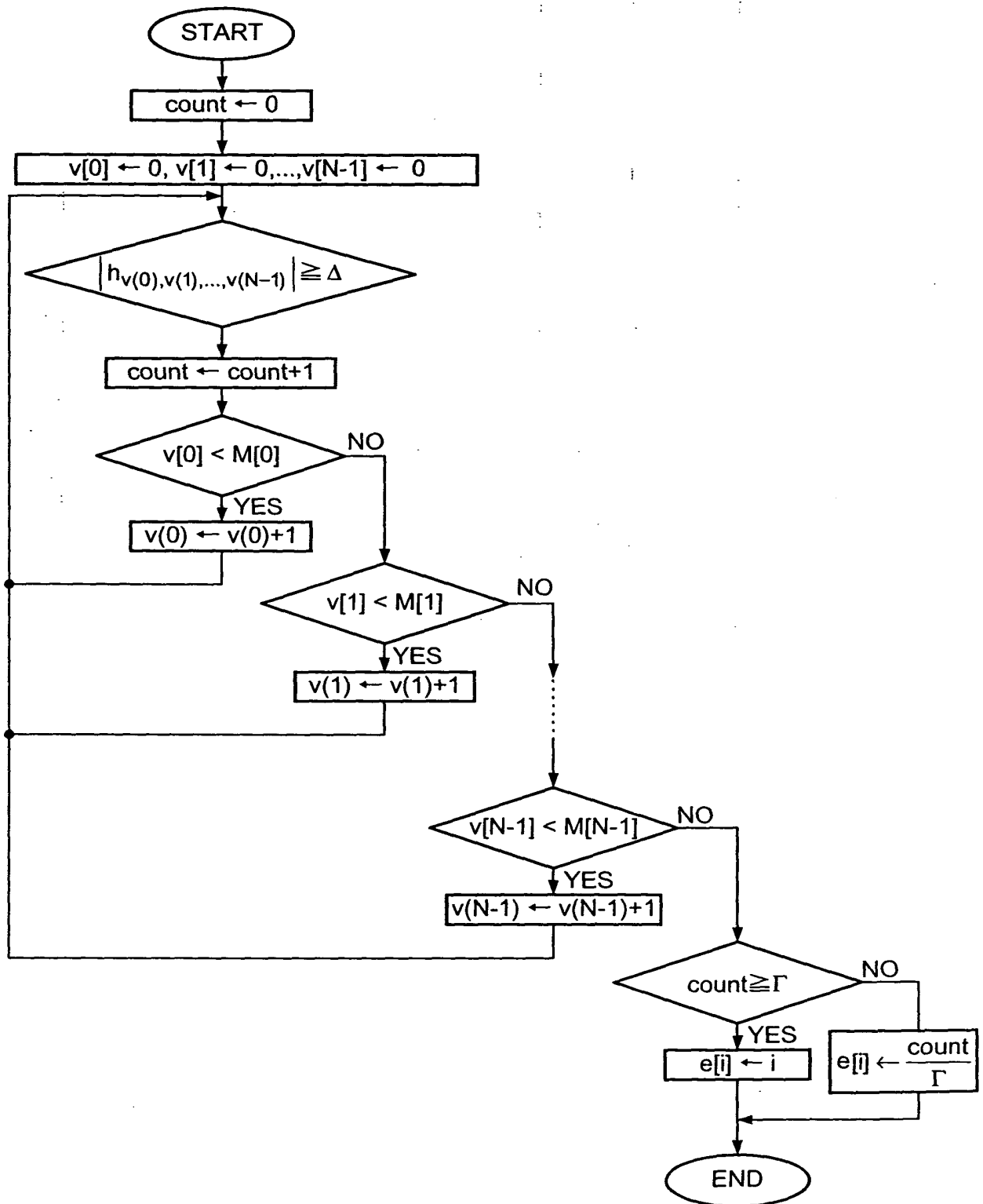


FIG.13

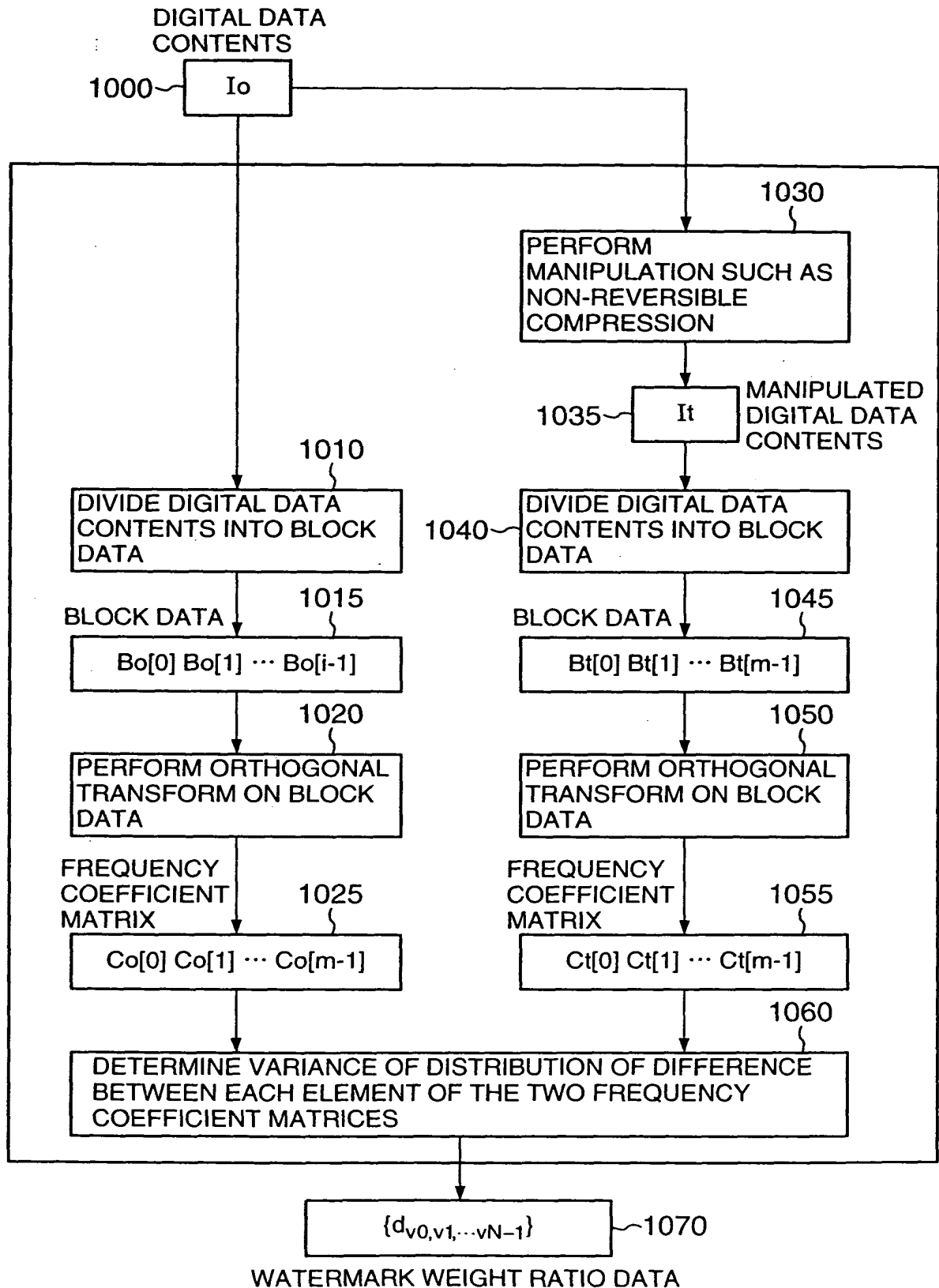


FIG.14

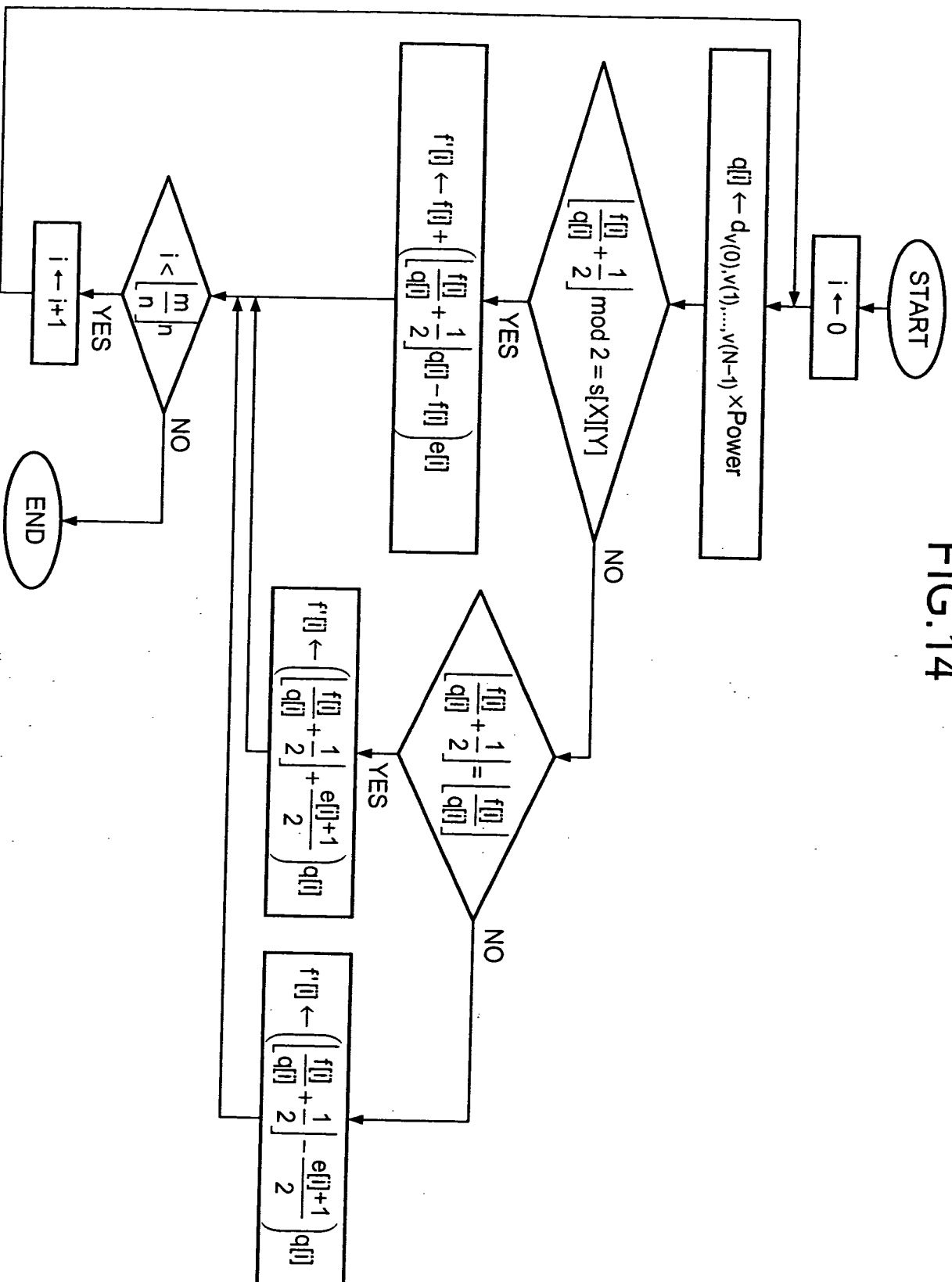


FIG.15

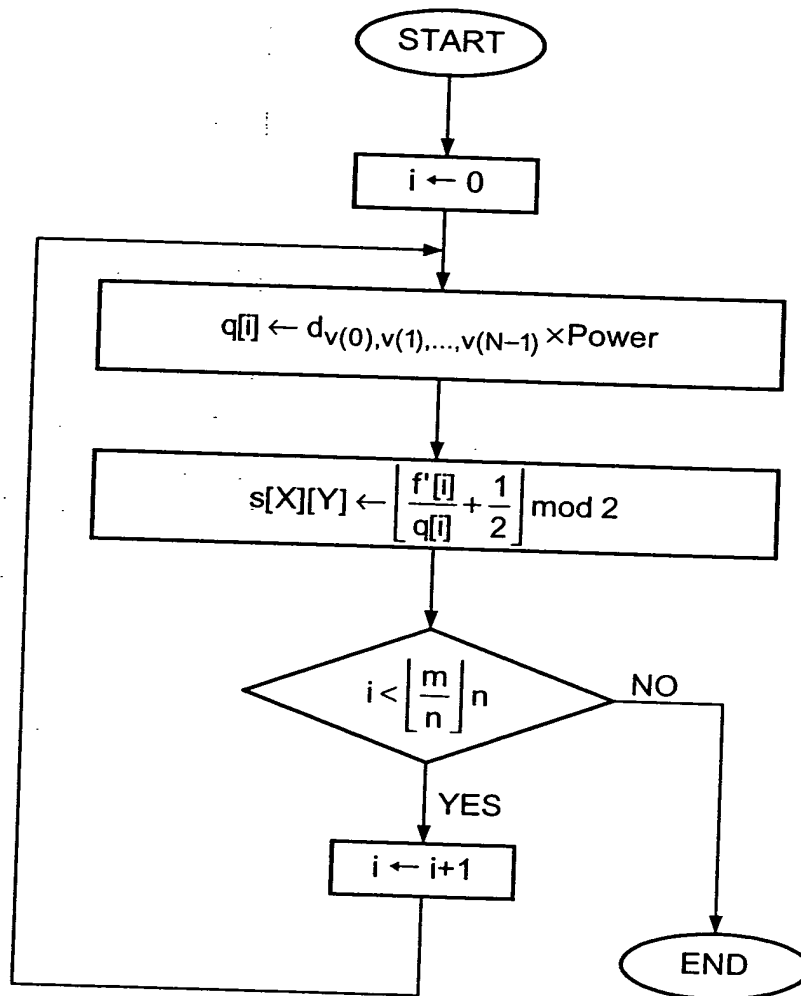


FIG.16

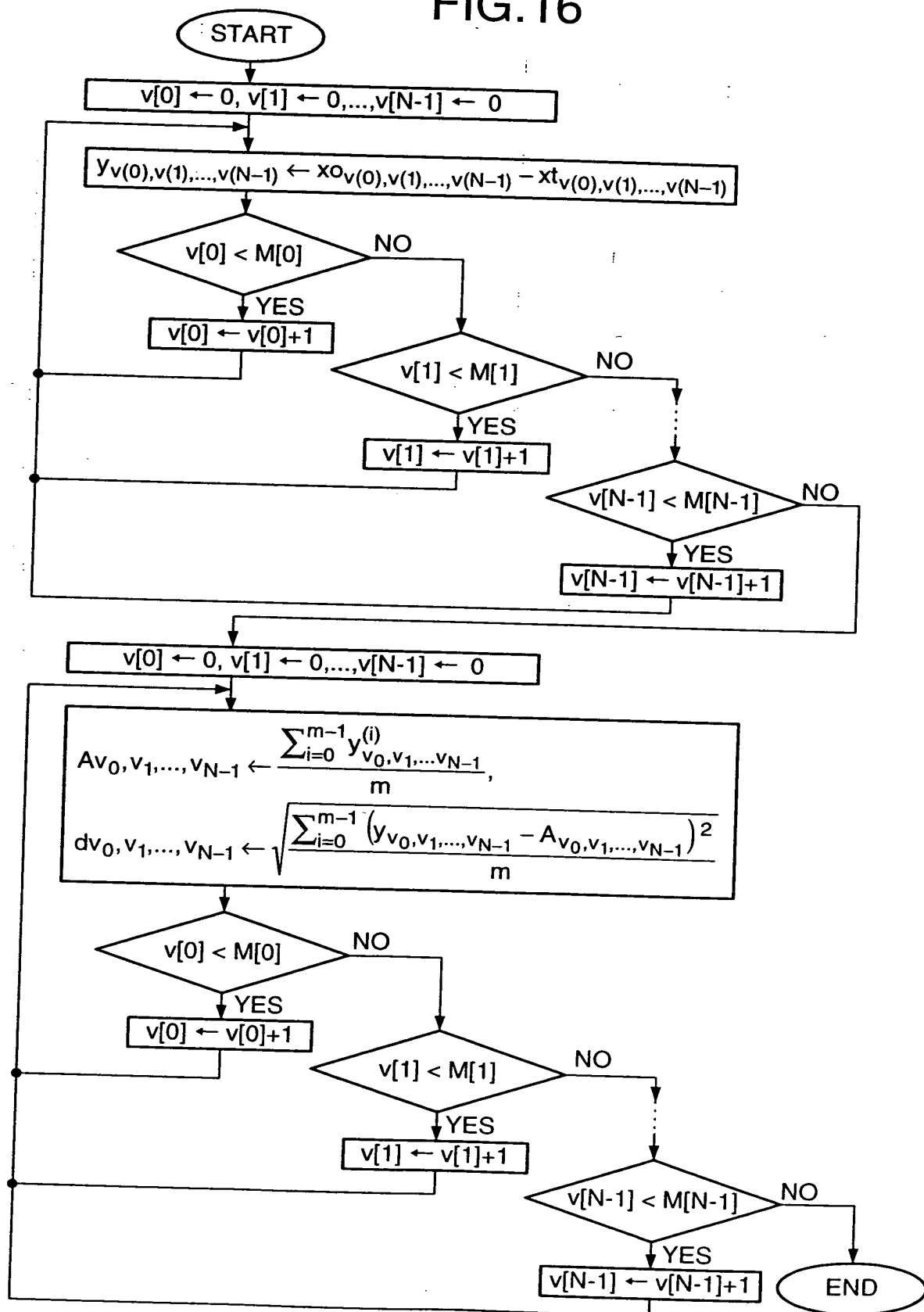


FIG.17

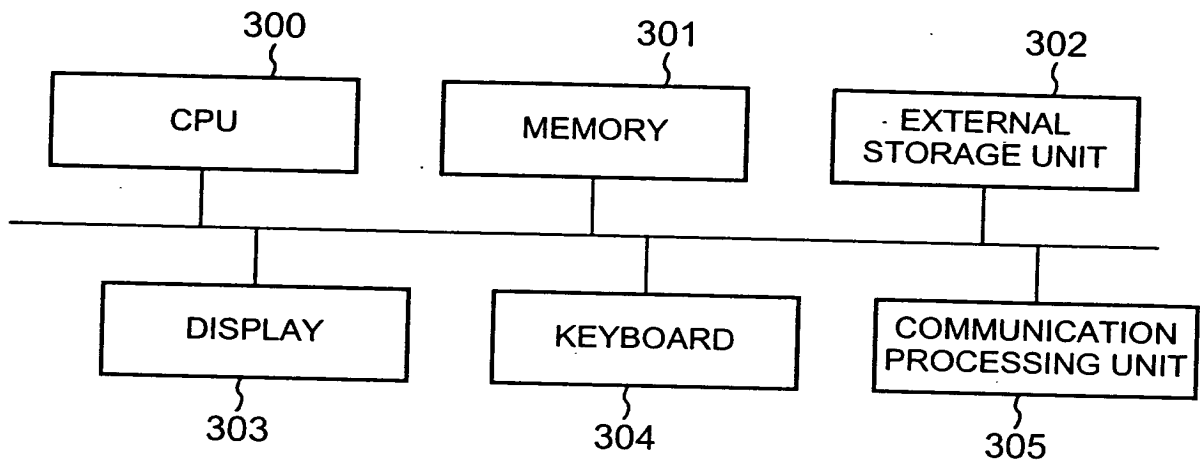


FIG.18

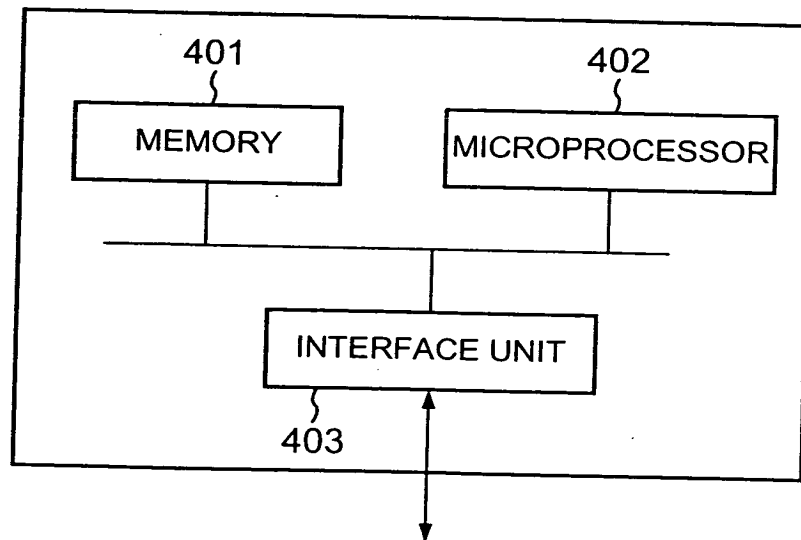


FIG. 19

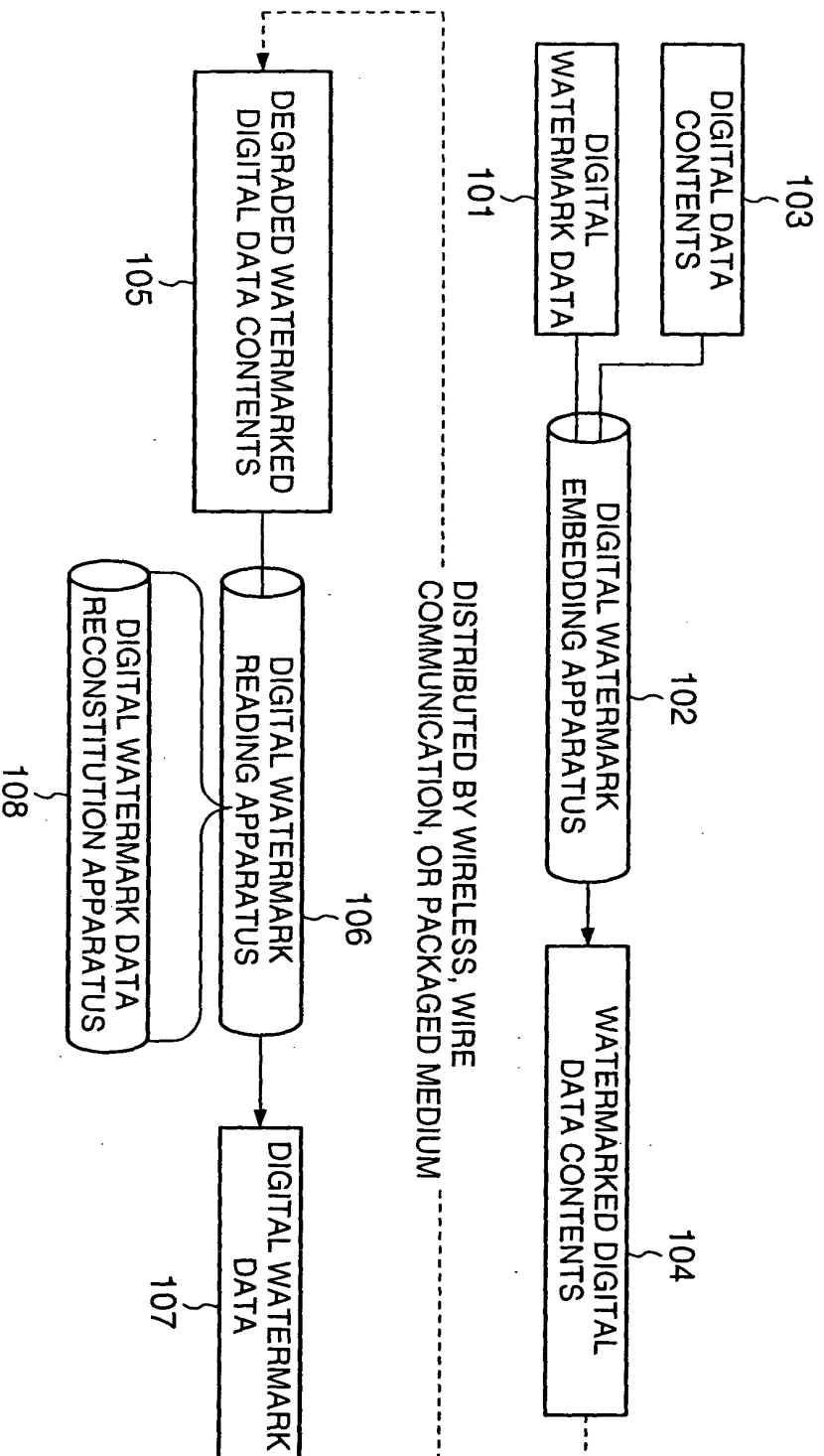


FIG.20

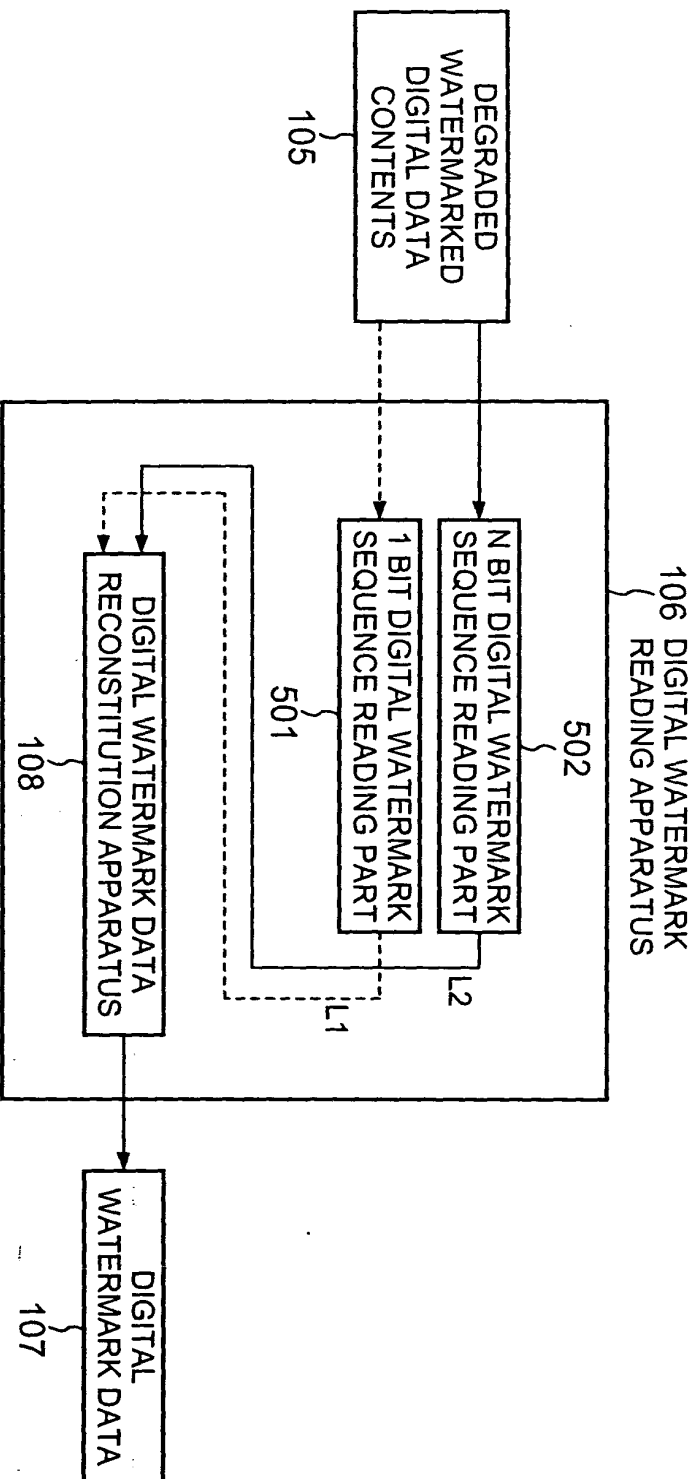


FIG.21

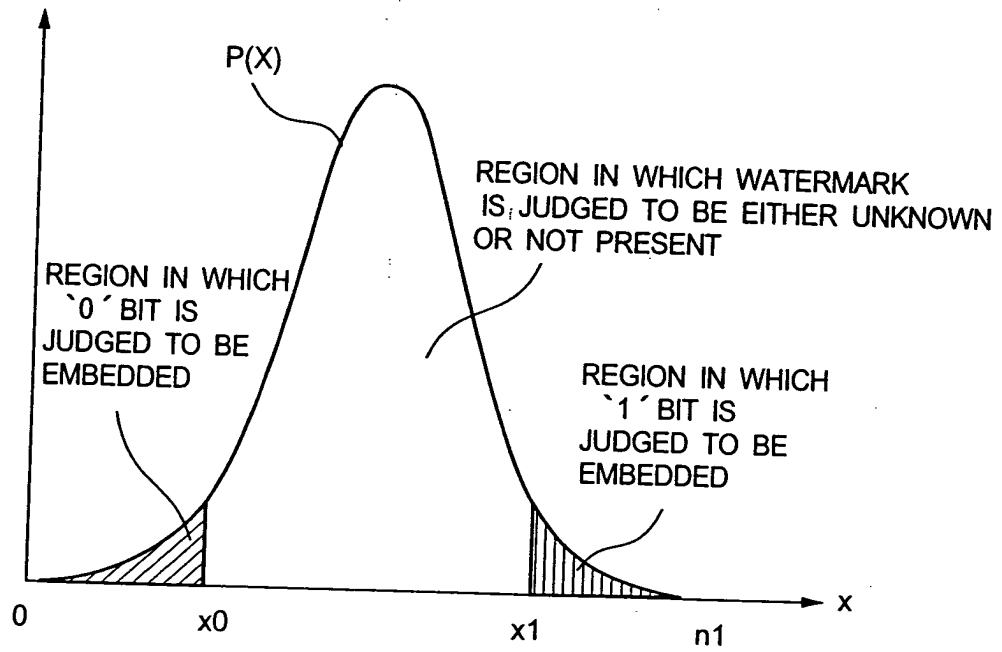


FIG.22

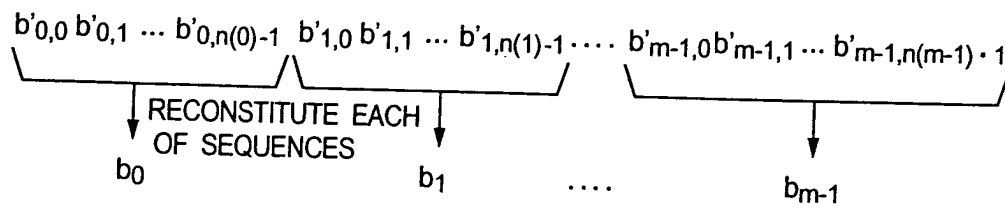


FIG.23

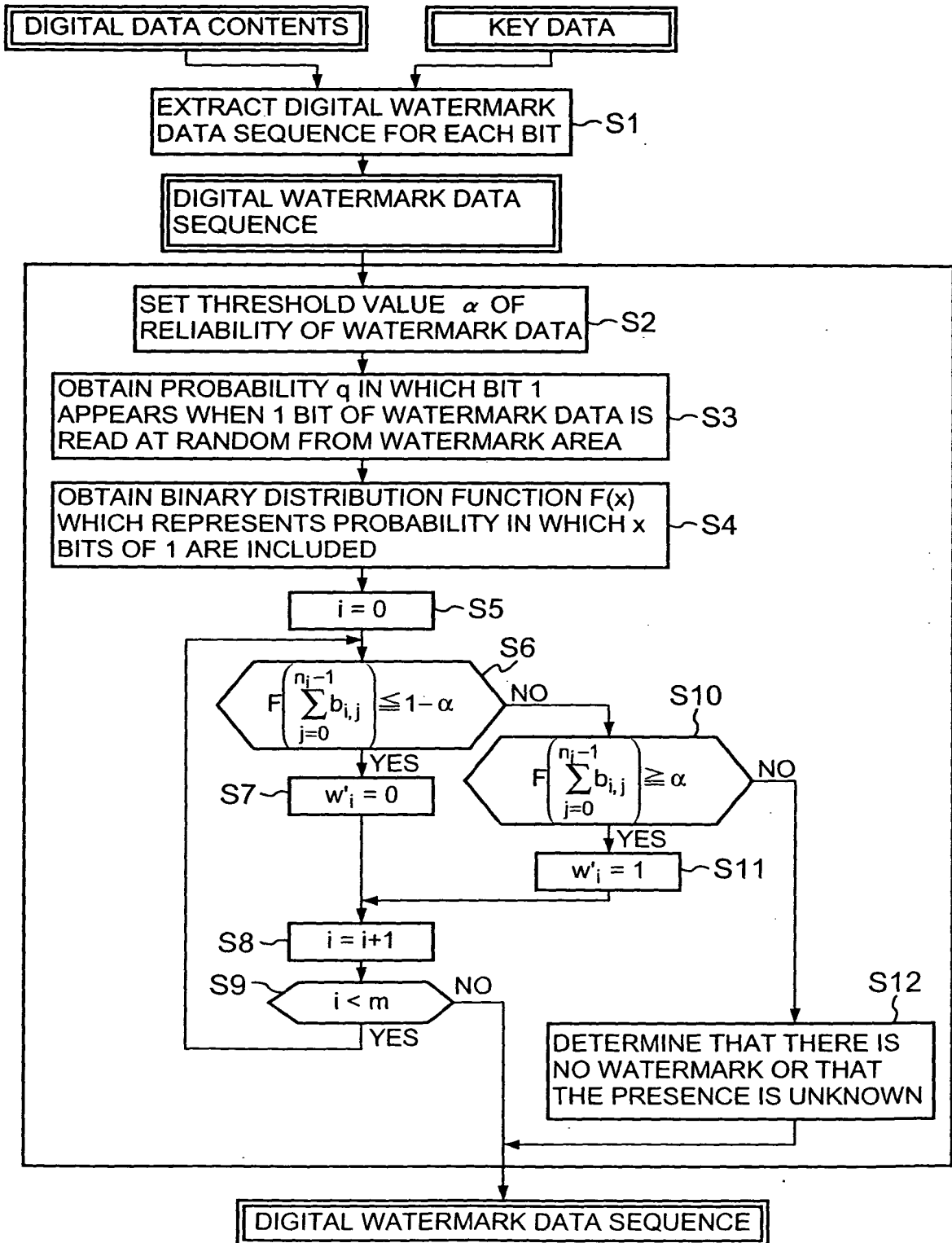


FIG. 24

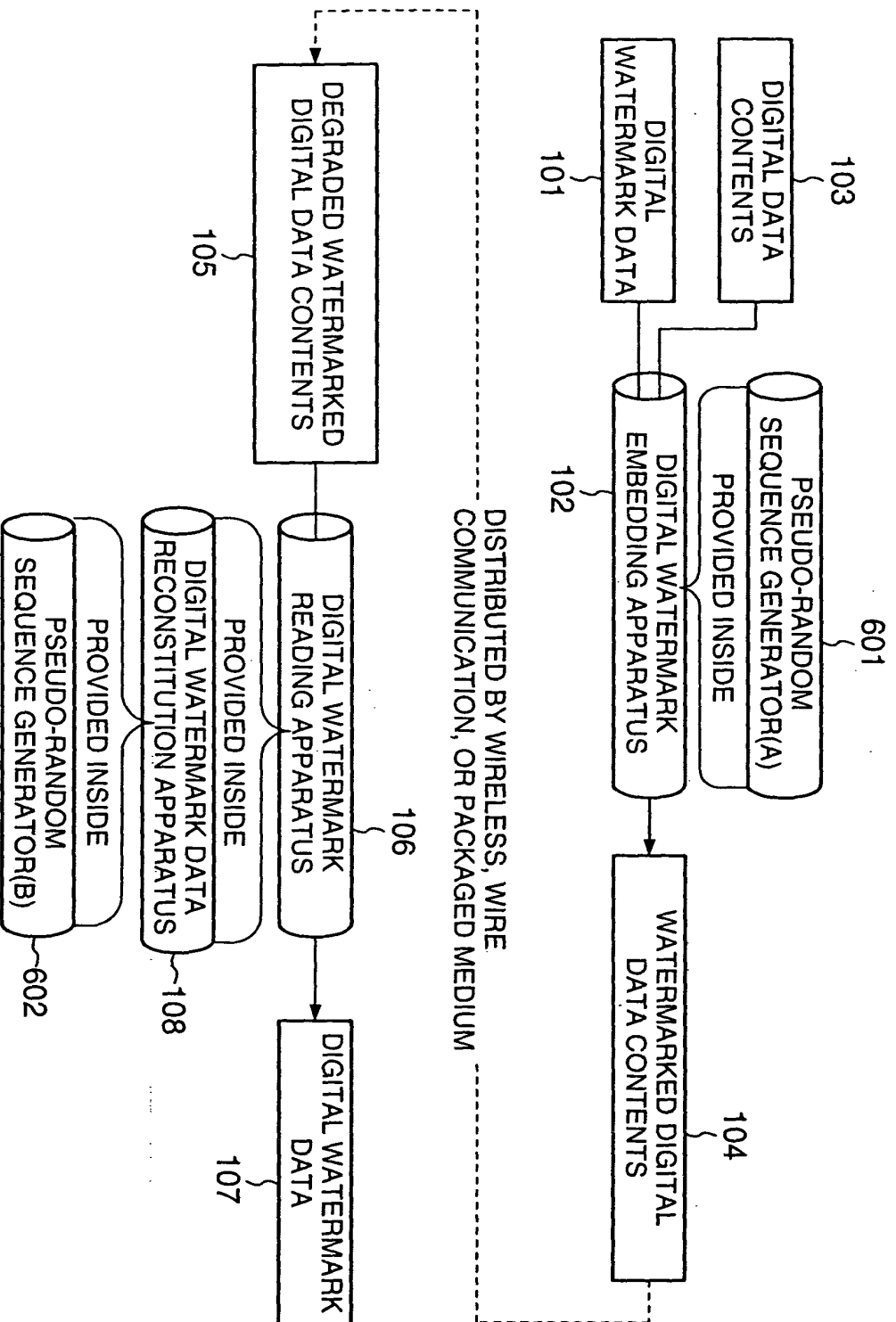


FIG.25

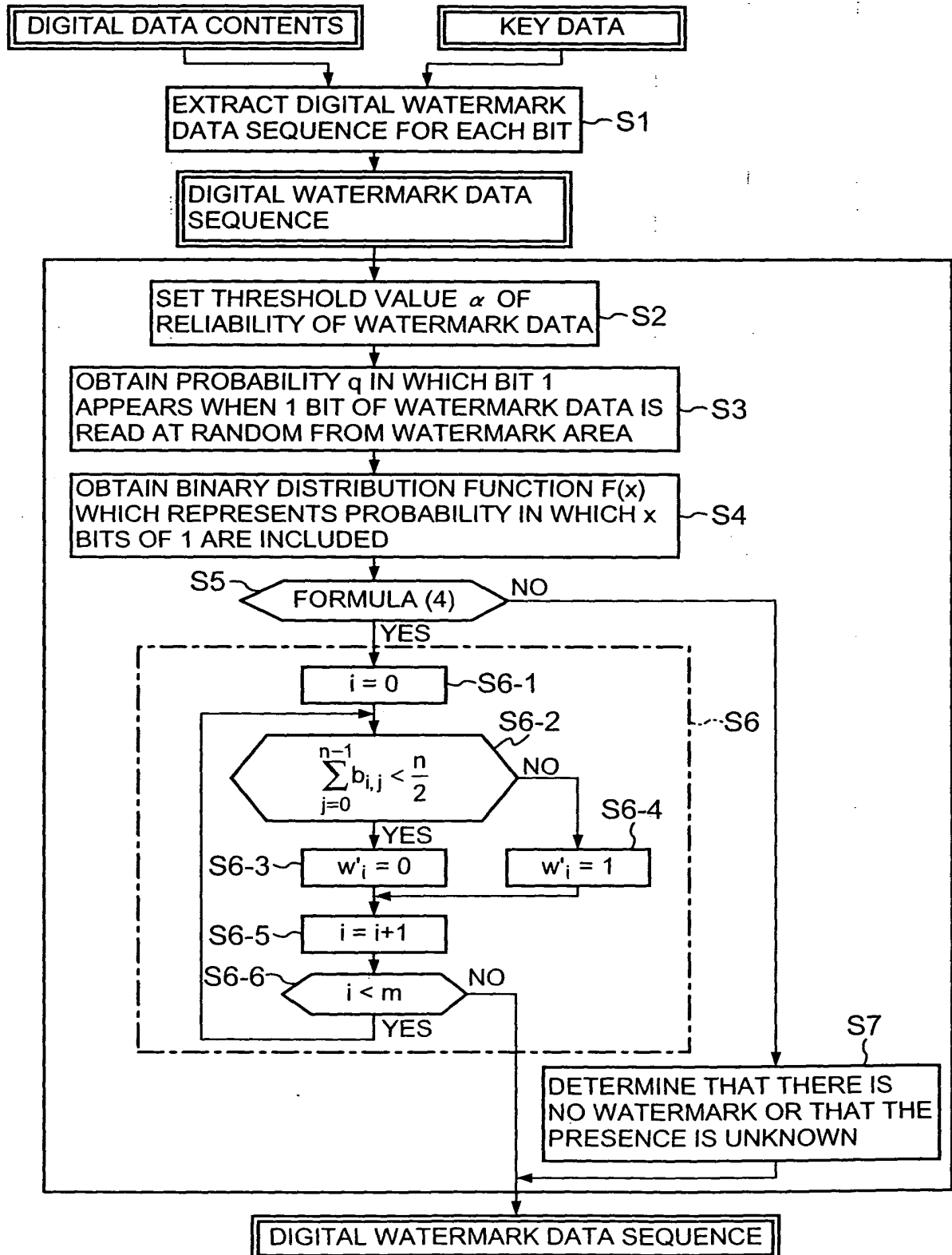


FIG.26

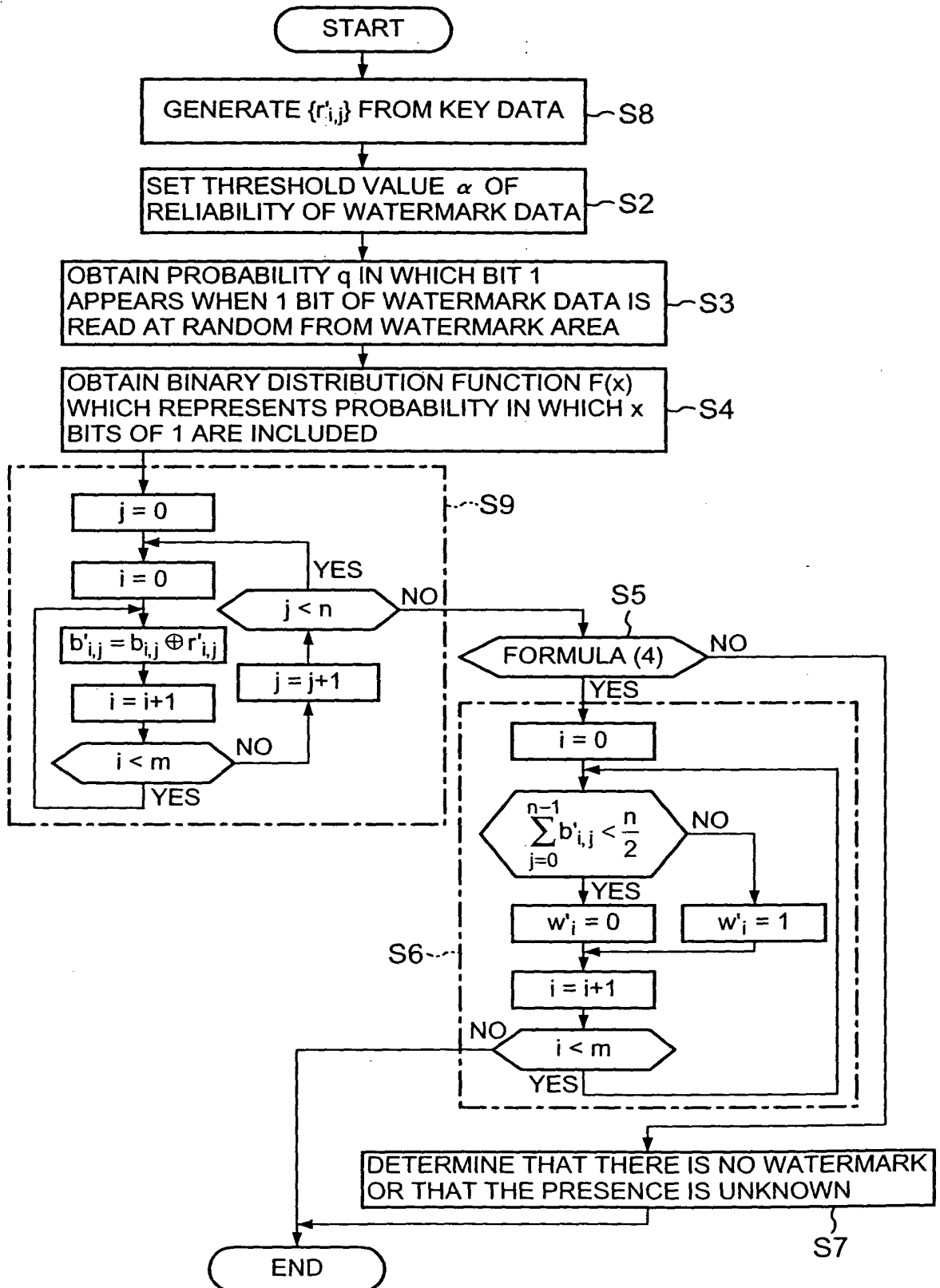


FIG.27

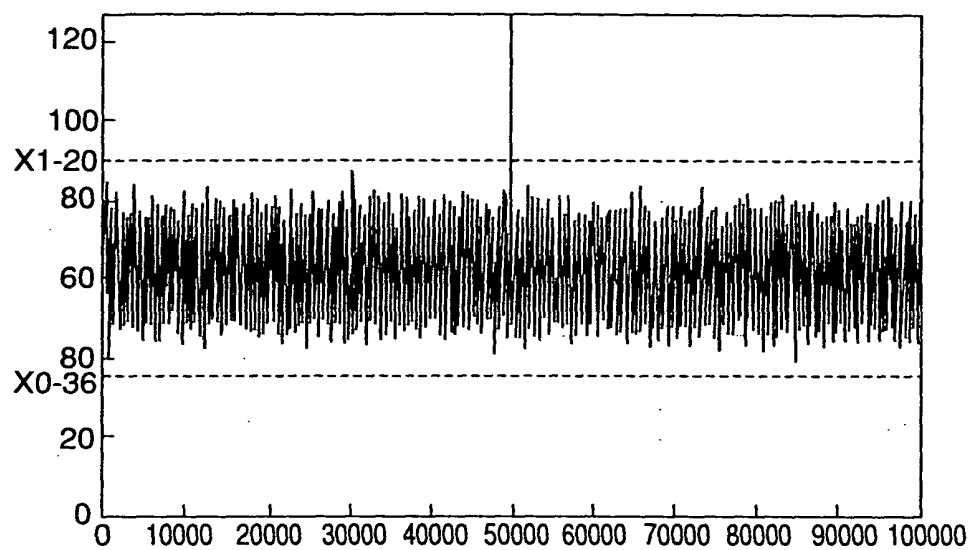


FIG.28

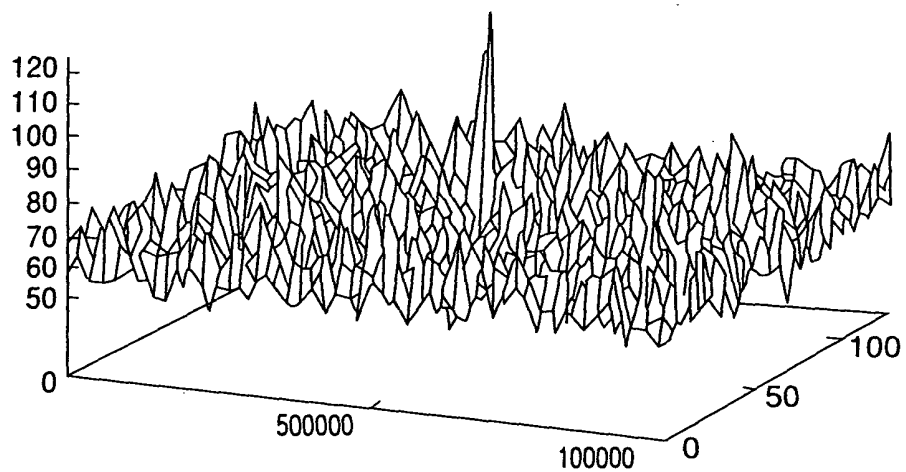


FIG. 29 PRIOR ART

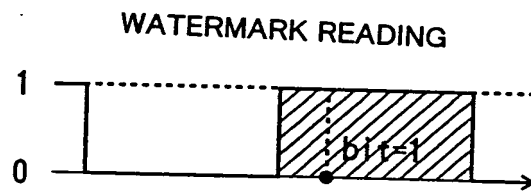


FIG.30

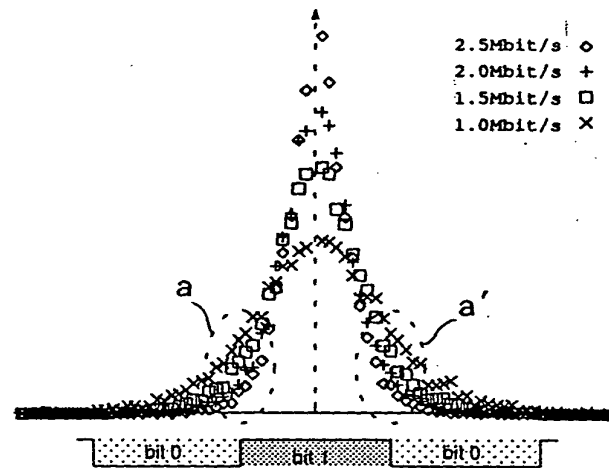


FIG. 31

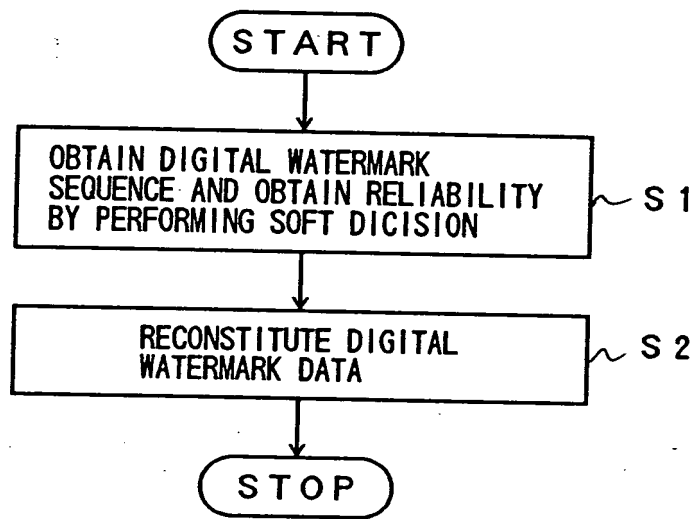


FIG. 32

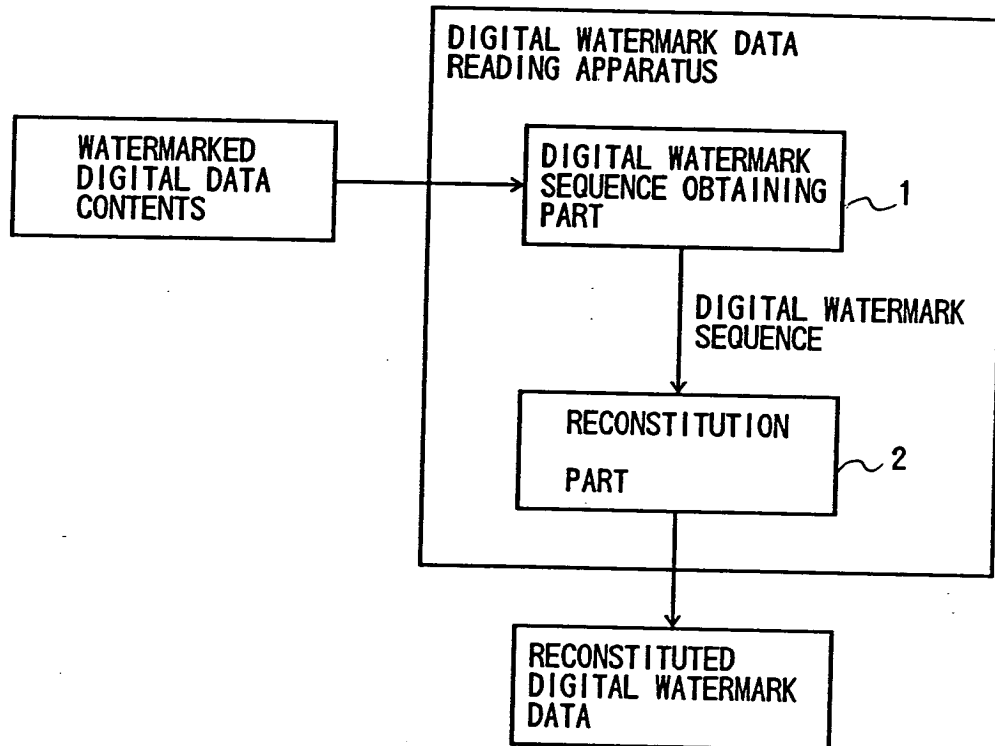


FIG. 33

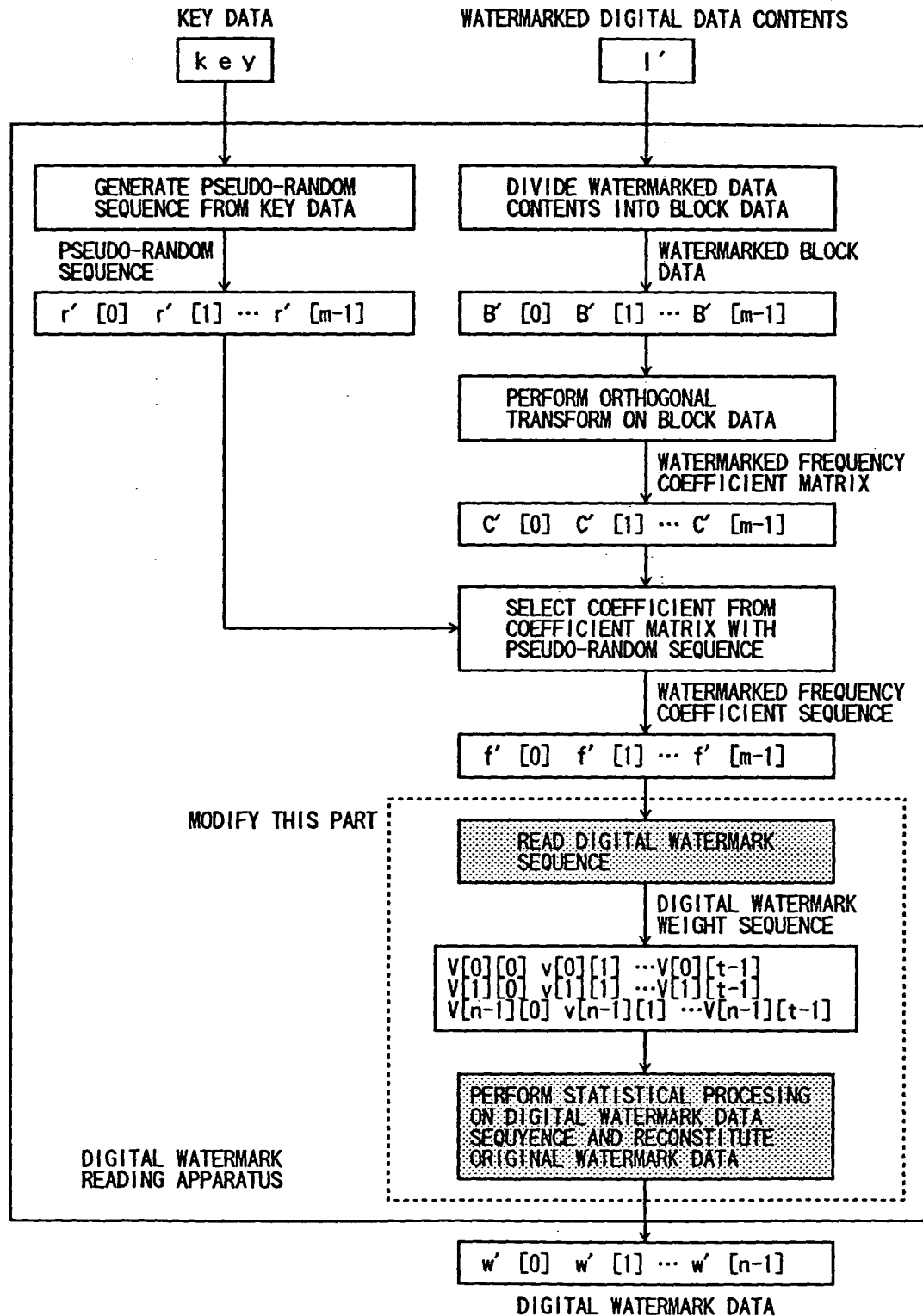


FIG.34

